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This final report covers January, 1967 through September 15, 1967, the period of Task One of the New England Library Information Network (NELINET). The primary objective of Task One was to set up procedures and programs to build a catalog data file for the center. The secondary task was to set up procedures to selectively extract bibliographic data from the catalog data file and output this data in the form of catalog cards, book spine labels, and book pocket labels. The system is designed to be compatible with the Machine-Readable Cataloging (MARC) system. The report contains descriptions and flow charts of programs written for Task One. (CC)

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NELINET - New England Library Information Network

CATALOG DATA FILE CREATION FOR THE NEW ENGLAND REGIONAL LIBRARY TECHNICAL PROCESSING CENTER

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Final Report
of
CLR - 374

Submitted to:
the
New England Board of Higher Education
June 20, 1968

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LI 000978

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1. SUMMARY

This final report covers the period of task 1, January 1967 through September 15, 1967. Task 1 was originally proposed to cover the period January 1, 1967 through August 1, 1967, but due to many unforeseen circumstances the schedule had to be extended beyond the cutoff date of August 1.

This report will cover the programs created to accomplish the task of creating a catalog data file, and the creation of programs to utilize this catalog data file to produce catalog cards, book spine labels, and book pocket labels.

Under paragraph 2, "Statement of Work to be Performed," in the proposal entitled Proposal for the Development of a System for Catalog Data File Creation for the New England Regional Library Technical Processing Center, the primary objective of task 1 was to set up procedures and programs to build a catalog data file, a file which will be needed by the Center. The secondary task was to set up procedures to selectively extract bibliographic data from the catalog data file and output this data in the form of catalog cards, book spine labels and book pocket labels.

Encompassed in this task was the proposition that not one library was to be satisfied but many libraries. In order to satisfy many libraries, programs that normally would be specific in nature had to be made flexible enough to meet the specified needs of each participating library.

Information specific to each participating library had to be gathered during the early part of the task and specifications for programming were based on this. Also to be taken into account was the philosophy of being completely MARC compatible. This meant digesting the Library of Congress report entitled "Preliminary Report on the MARC Pilot Project," October 1966. Since the preliminary report only lightly covered what the Library of Congress was doing, more information had to be gathered on details unspecified in the report and programs being created had to be re-written to conform with these details. Another aspect that had to be taken into account was the MARC II project, which is a complete revision of MARC I. Task one programming had to be made general enough so that minimum effort is lost in conversion to MARC II.

Occasionally local variations were too different to be handled by the programs. In some cases agreement was obtained among the libraries thus reducing the number of variations to programable proportions. In other cases provisions were made in the programs for submission by the local library of alternate data e.g., a Dewey call number instead of the L.C. one.

1.1 Programs Written for Fulfillment of Task One

The following programs were written during the task 1 period:

1. Master File Generator. Two versions of this were written.

   a. MFG-1. This program converts catalog data supplied by libraries and keyed at the center when no MARC data is available into the NELINET catalog data file format.

   b. MFG-2. This program inputs MARC 1 tapes that have been converted to 200 bits per inch into NELINET catalog data file format.

2. Sort Key Generator, SK-1. This program produces a magnetic tape which can be sorted on specified items. The desired items are searched for in each record and when found generated as the first item of the record. This is analogous to typing headings onto a unit card. It is a general purpose program in the sense that a sort by any item or combination of items may be specified.

3. Edit-Merge Program, EM-1. This program will allow merges of past NELINET catalog data files with new catalog data. This program will also be used in task 2 to merge new directories with old directories.

4. File Printout Program, FP-1. This program allows any or all of the NELINET catalog data file to be printed out for inspection, checking, or editing purposes.

5. Cataloging Service Program, CSP-1. This program accepts the teletype tape requests in L.C. card number order from the libraries and matches the requests against the NELINET catalog data file. The program includes profile tables (Appendix A) with the card formulas for each library and the size formulas and symbols. Using these tables and the location, copy and volume information from the request it produces magnetic tape records of the catalog cards, spine labels and book

pocket labels. The program also indicates by output those requests for which no catalog data is found.

6. Line Printer Program, LP-1. This program uses the tape from the CSP-1 program to produce the paper tape used by the Dura typewriters to make cards and labels and subsequently the magnetic tape used by the 1403 line printer to make catalog cards. This program structures the information into proper form, line by line.

2. FLOW CHARTS FOR TASK 1 PROGRAMS

Explanation: The accompanying figures (2.1 - 2.4) are flow charts of the present NEBHE Task 1 system. They have been broken into the order in which they are run. Changes will be made in the final system as more data is gathered and better techniques are devised to make their operation smoother.

2.1 The Master File Creation (L.C. Data)

The master file creation using Library of Congress data will work in the following way: (note: numbers appearing in parentheses are those numbers appearing on the figures themselves.)

Weekly MARC tapes (1) are acquired from the Library of Congress and are processed through the master file generator (2). The master file generator strips out the current records and puts records on a new tape (3) in NELINET master file format. This tape is then merged (4) with the present NELINET master file to create an updated NEBHE Master File.

2.2 Master File Creation (Local Data)

Master file creation using local library data, figure 2.2, is used when a library queries the master store of data and finds that the information is not available. They then have the option to tag this information and forward the tagged data (1) to the centralized processing center. This information is keyed(2), proofread (3), and edited (4) at the NELINET center. This tape is then converted into the Master File Format (5) and merged in with the NELINET Master File (6).

2.3 Request Tape Creation, Figure 2.3

On a regularly scheduled basis the libraries will be transmitting (via teletype) to the processing center requests for cards, spine labels, and book pocket labels (1). The center (2) will batch the requests together and send them into a master file program (3) which will validate the requests while converting the ASCII format tapes to NELINET master file structure. The resulting magnetic tape is then sorted into Library of Congress card number order (4), (5), and (6). This tape will be used to match against the NEBHE master file.

2.4 Catalog Data Production, Figure 2.4

The catalog data production system uses a series of programs to create cards, pocket labels and book spine labels in the following way:

The request tape and the NELINET master file tapes (1) are matched within the card and label program (2). Upon a match

the requirements of the library are used to create the correct number of cards and/or labels which are output on magnetic tape (3). This tape is used as input into the line printer formatting program (4). This program outputs both a magnetic tape (5) or a label tape (5a). An IBM 1401 computer is then used to list the tape on an IBM 1403 line printer (6) to produce the catalog cards (7).

A Dura Mach 10 paper tape driven typewriter (6a) is used to produce the book spine labels (7a) and book pocket labels (7b).

MASTER FILE CREATION USING LIBRARY OF CONGRESS MARC - 1 DATA

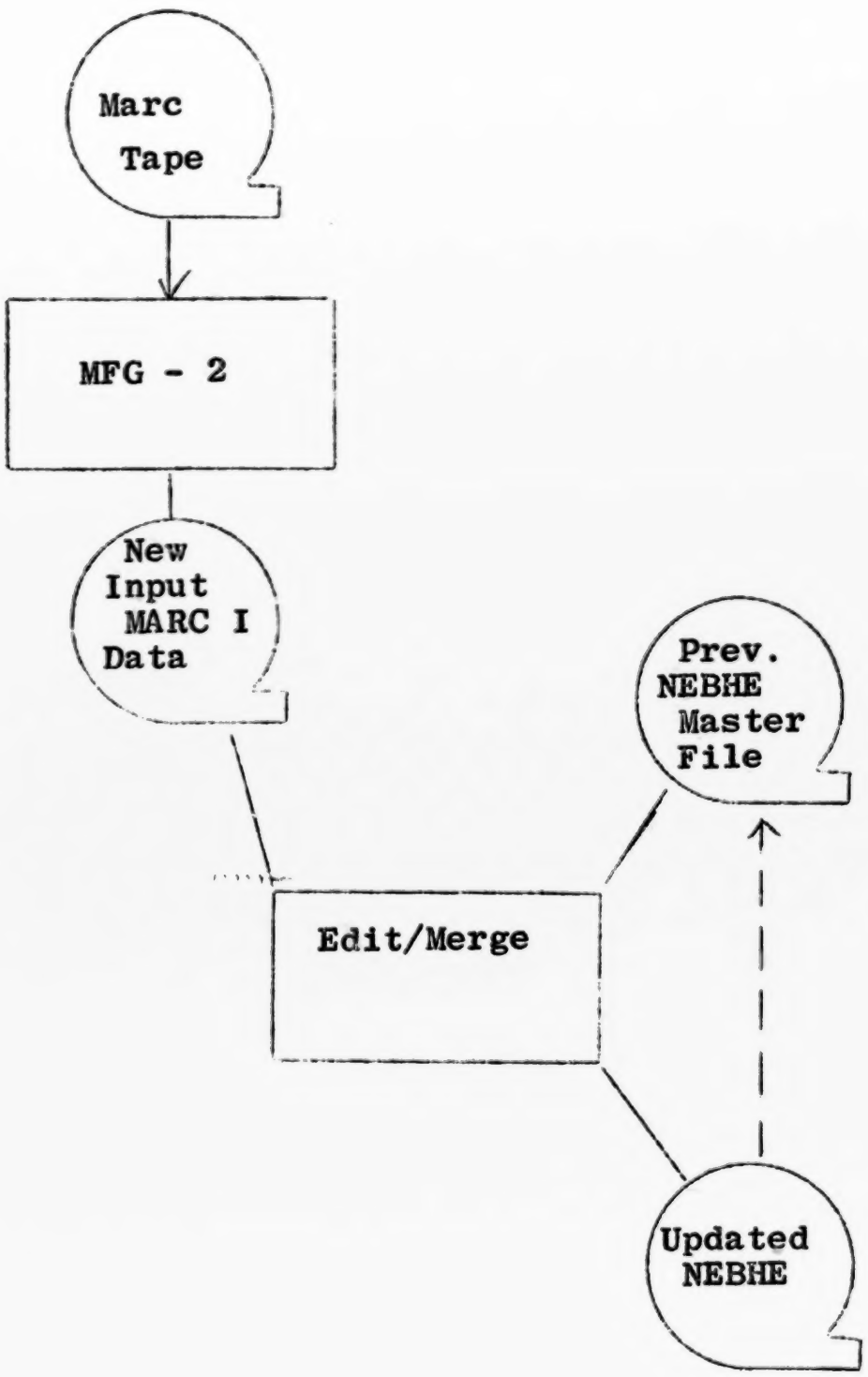

FIGURE 2-1

MASTER FILE CREATION USING LOCAL LIBRARY DATA

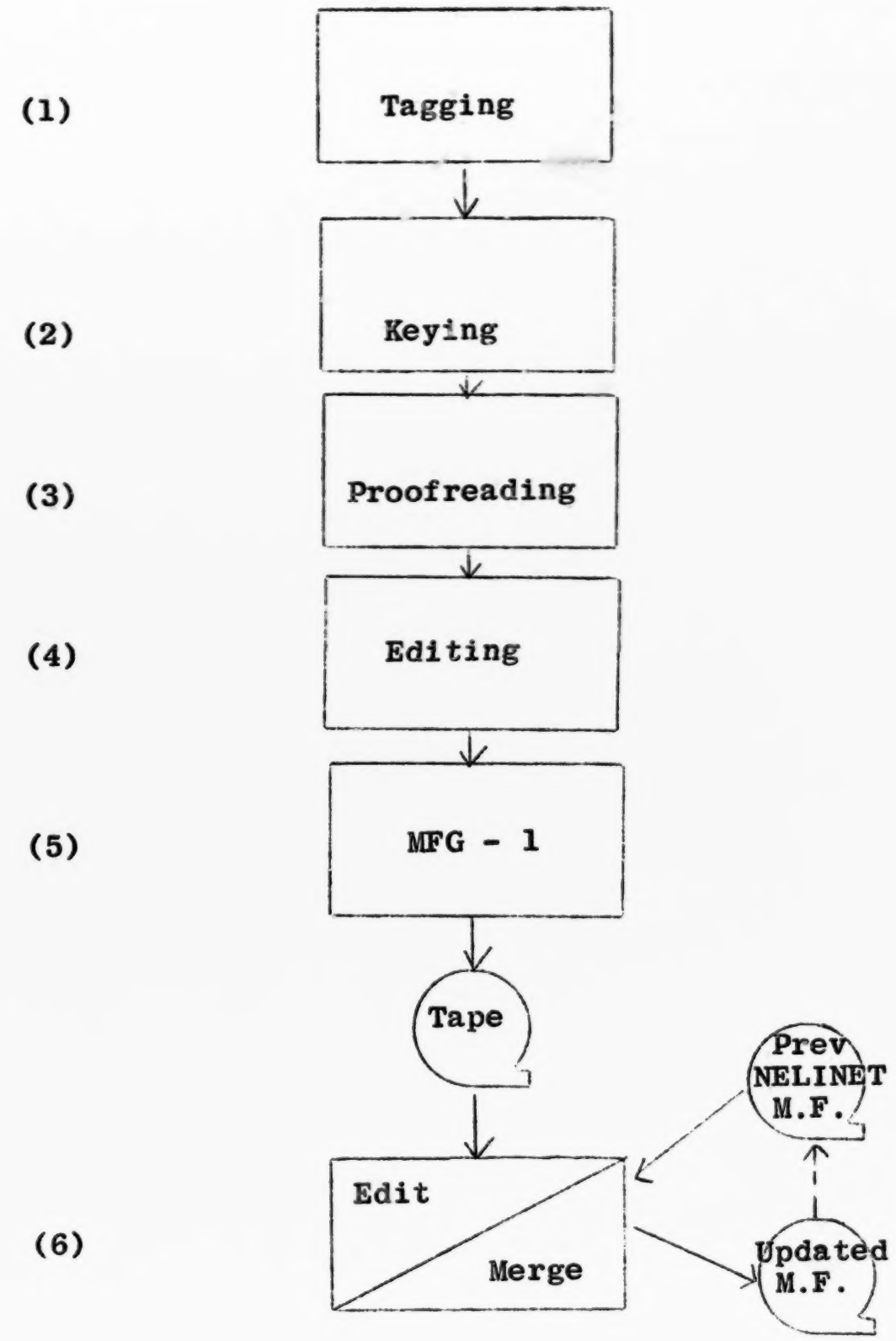

FIGURE 2-2

REQUEST TAPE CREATION

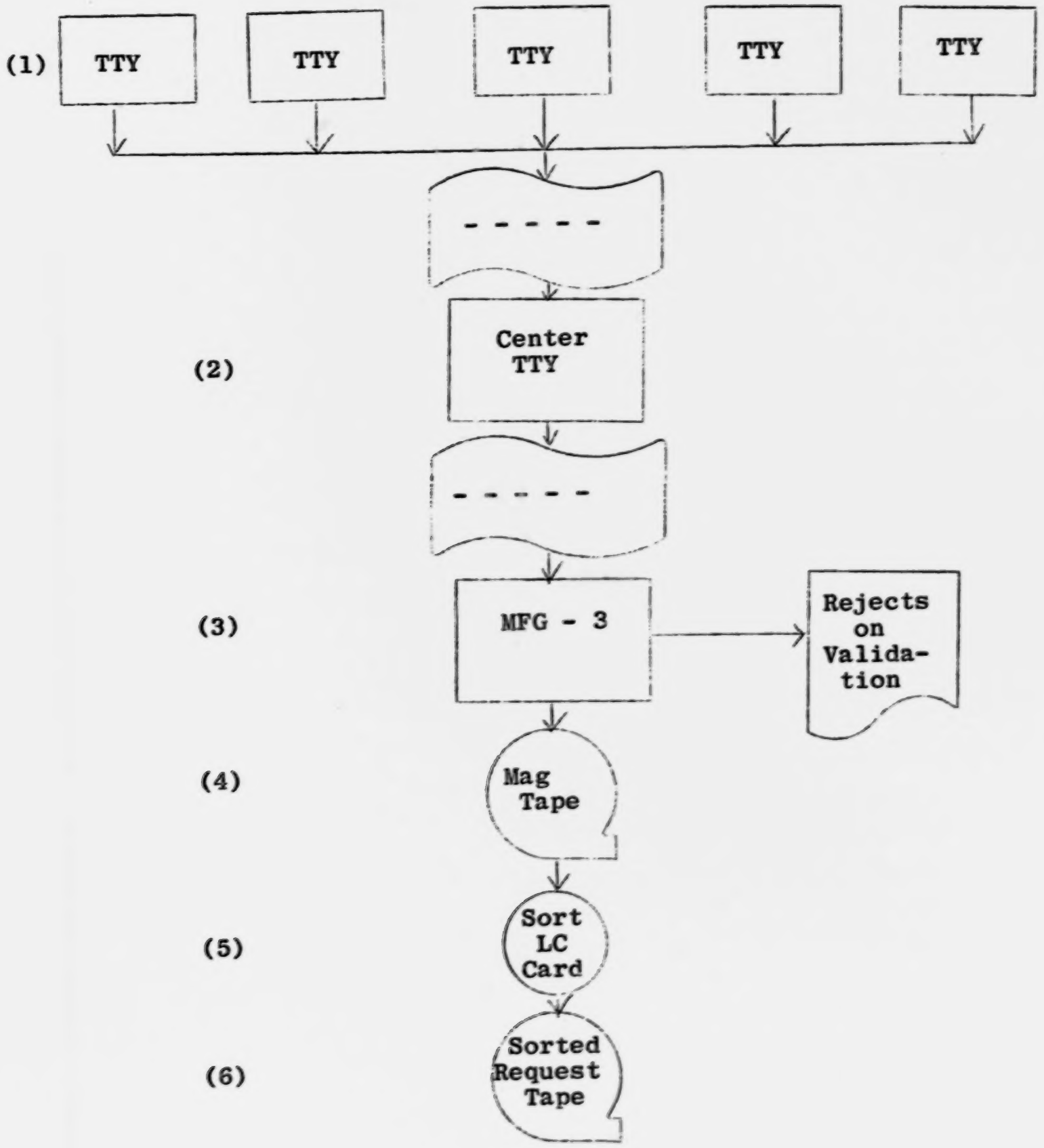

FIGURE 2-3

CATALOG DATA PRODUCTION

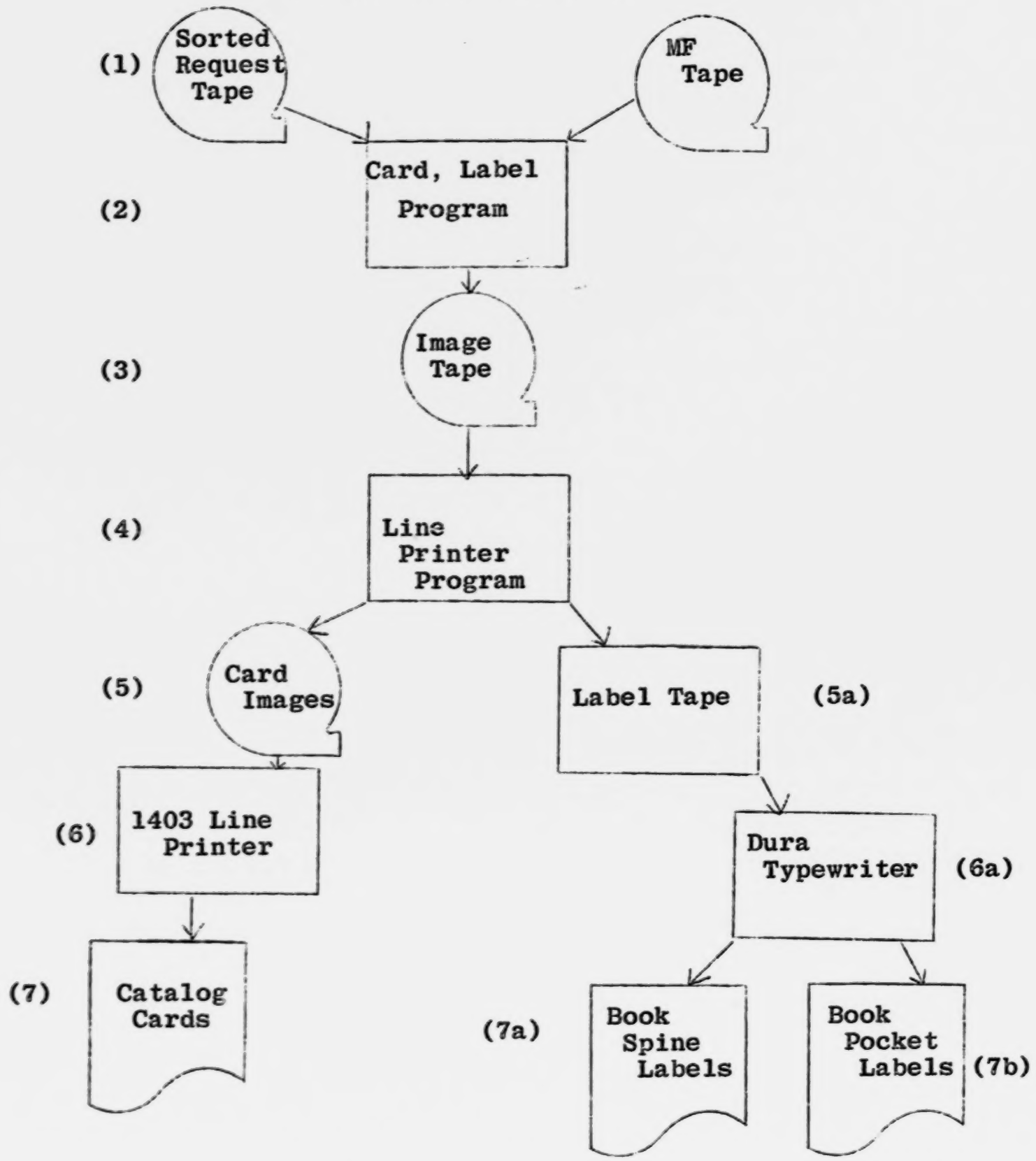

FIGURE 2-4

3. RESULTS OF THE 500 TITLE TEST

The card production programs required more time than originally estimated. When they were completed the programs to demonstrate card production in response to teletype requests from libraries were also avaliable. This enabled the 500 title test to be combined with the demonstration of services to libraries.

Catalog cards for more than 500 titles have been sent to various state university libraries in New England*. Some of the cards are now part of the libraries' public catalogs. (Figures 3.1 and 3.2 show sample cards.)

Of at least as great importance as the cards which are in use are the improvements wrought in response to the libraries' comments on the cards.

Three broad categories of improvements have been identified:

1. Corrections of misinterpretations of the MARC format. For instance, the omission of the tracing numbers from the data which required that the numbers be generated. Correspondence with the Library of Congress has brought these to their attention.

2. Improvements to make the system more efficient. For instance, redesign of the request form gave more of the burden of interpretation to the computer and less to the teletype operator.

3. Format improvements to meet unforeseen requirements. For instance, spelling out of subject heading subdivision abbreviations was requested and accomplished.

A file of these "problem reports" is maintained at Inforonics.

---

* Selin labels were made for the majority of the card sets.

Fig.3.1 Sample Set of Cards

HQ
31
W53
1967b

Whiteley, Charles Henry.
Sex & morals [by] C. H. and
Winifred M. Whiteley. New York,
Basic Books [1967]
135 p. 22 cm. (Ideas in action)
Bibliography: p. 132-133.
1. Sexual ethics. I. Whiteley,
Winifred M., joint author. II. Title.

Shelf List Card

Sex & morals

HQ
31
W53
1967b

Whiteley, Charles Henry.
Sex & morals [by] C. H. and
Winifred M. Whiteley. New York,
Basic Books [1967]
135 p. 22 cm. (Ideas in action)
Bibliography: p. 132-133.
1. Sexual ethics. I. Whiteley,
Winifred M., joint author. II. Title.

67-24967
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Title Card

Whiteley, Winifred M., joint author.

HQ
31
W53
1967b

Whiteley, Charles Henry.
Sex & morals [by] C. H. and
Winifred M. Whiteley. New York,
Basic Books [1967]
135 p. 22 cm. (Ideas in action)
Bibliography: p. 132-133.
1. Sexual ethics. I. Whiteley,
Winifred M., joint author. II. Title.

67-24967
176

Added Entry Card

SEXUAL ETHICS.

HQ
31
W53
1967b

Whiteley, Charles Henry.
Sex & morals [by] C. H. and
Winifred M. Whiteley. New York,
Basic Books [1967]
135 p. 22 cm. (Ideas in action)
Bibliography: p. 132-133.
1. Sexual ethics. I. Whiteley,
Winifred M., joint author. II. Title.

67-24967
176

Subject Card

NhU
HQ31.W53 1967b

Main Entry Card

HQ
31
W53
1967b

Selin Label

HQ
31
W53
1967b

Whiteley, Charles Henry.
Sex & morals [by] C. H. and
Winifred M. Whiteley. New York,
Basic Books [1967]
135 p. 22 cm. (Ideas in action)
Bibliography: p. 132-133.
1. Sexual ethics. I. Whiteley,
Winifred M., joint author. II. Title.

NhU
HQ31.W53 1967b

67-24967
176

Fig.3.2 Additional Sample Cards

341
A725 Arms control for the late sixties.
Editors: James E. Dougherty [and] J. F. Lehman, Jr. Princeton, N.J., Van Nostrand [1967]
xlvii, 265 p. illus. 24 cm.
Outgrowth of the Third International Arms Control Symposium held in Philadelphia in April 1966.
Includes bibliographical references.
1. Disarmament--Addresses, essays, lectures. 2. Atomic weapons and
(cont. next card)

67-27982

341
A725 Arms control for the late sixties. (card 2)
1967

disarmament--Addresses, essays, lectures. I. Dougherty, James E., ed. II. Lehman, John F., ed. III. International Arms Control Symposium, 3d, Philadelphia, 1966.

conn.
JX1974.A75

67-27982
341.6/7

Title Main Entry With Call Number Supplied by Local Library

U.S.--SOCIAL LIFE AND CUSTOMS--
COLONIAL PERIOD.

ovsize
NK
806
D38 Davidson, Marshall B.
The American heritage history of colonial antiques, by the editors of American heritage. Author and editor in charge: Marshall B. Davidson. [New York] American Heritage Pub. Co.; book trade distribution by Simon and Schuster [1967]
384 p. illus. (part col.) 29 cm.
1. Art objects, American--Hist. 2. U.S.--Soc. life & cust.--Colonial
(cont. next card)

67-23439

U.S.--SOCIAL LIFE AND CUSTOMS--
COLONIAL PERIOD.

ovsize
NK
806
D38 Davidson, Marshall B. The American heritage history o... 1967 (card 2)

period. I. American heritage. II. Title.

n.h.
NK806.D38

67-23439
709/.73

Subject Card With Abbreviated Subject Subdivision Spelled Out and Oversize Symbol Above Call Number

APPENDIX A: MASTER FILE GENERATOR

The Master File Generator will accept input from paper tape, mag tape and DECTAPE in BCD and Dura codes. In addition, special code translation routines may be added by relinking the Master File Generator with them. It will translate the input format into KID and KIDMAP format and put it on DECTAPE, mag tape or paper tape in Master File Code. All data processed will be stored in KID and KIDMAP format.

A.1 Definition of Terms

Item -	A string of characters, for example in a library card: author, title, etc.
Record -	A set of items, for example a library card.
File -	A set of records.
Inforonics Master File Code -	Code used for all internal storage and output.
Explicit Flag -	A code sequence used exclusively to indicate a printing tag will follow. Several different flags may be used simultaneously.
Line Count -	The number of carriage returns processed since start of record.
Fixed Field -	(mag tape input) A fixed length item identified by serial position and length.
Delimiter Sequence -	A code sequence occurring in text used to identify items.

MFG will recognize items in the following ways:

1. line count
2. fixed field
3. printing tags

In addition, it will recognize an end of record except when all items are fixed field. A description of each of these methods of identification follows.

A.2 Line Count

Items are identified by a starting line number; the item begins at the left margin. A line count item is terminated by entering another item in one of the three ways listed above. Line count has precedence over other forms of item identification. (i.e. if an item is identified by line count an explicit flag of carriage return - not tab would be ignored.)

A.3 Printing Tags

One way of identifying items is to imbed (printing) tags made up of numbers or letter in the input text. During processing the tag is removed as soon as the item has been identified. These tags may be one to five characters long. They are introduced by an "explicit flag," that is a sequence of one, two or three characters that indicates a printing tag follows. There may be several explicit tags but each must always introduce a printing tag. A printing tag is terminated by a one character delimiter which must be specified for each tag. If a legal printing tag is found in text, the delimiting sequence, printing tag and character delimiter are all removed before processing the next item.

For example, an explicit flag commonly used is the two character sequence carriage return, not-tab. In this case all information appearing at the left margin would be printing tags; all other information would be indented. (see Figure A.3)

A.4 Delimiter Sequences

Delimiter sequences are strings of one to six characters which indicate the transition from one item to another. These sequences are not unique; they indicate the possible termination of an item. Three pieces of information are necessary to define each transition: the old item number, the delimiter sequence and the new item number. A delimiter sequence is not meaningful unless it occurs in one of stated item numbers. Delimiter sequences are removed from the text after identification.

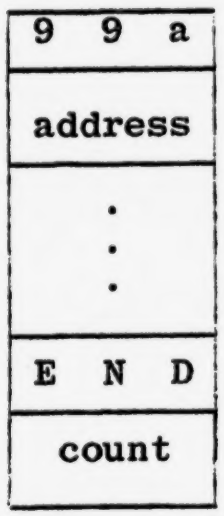
A.5 KID and KIDMAP Format

KID and KIDMAP format is the internal format for all data. It consists of two parts for each record: a directory to the data called KIDMAP and the data itself, KID. The directory consists of word pairs for each separate item stating the item number (1a-99y)[1] and a pointer relative to the beginning of the KID (starting with Ø).

---

[1] Item number Ø is illegal. Sub item Z of each number is reserved for system use.

The KIDMAP is terminated by the word "END" in Master File Code and a character count. The character count is three times the actual number of words in the KID. The KID contains the data in Master File Code. Each new item starts a new computer word; lines are filled out with 76 codes. At least one 76 code must terminate an item. (see Figure A.6)



A.6 Fixed Field

This method of recognition is for mag tape files only where formatting characters such as carriage return, multiple spaces and tabs do not occur. Items are specified by a beginning character position and a field width. Items for fixed field must be in numerical order by character position.

A.7 Input Language for Master File Generator

Tables which describe a particular input file are entered symbolically into the Master File Generator before processing. The language used to describe these tables is a set of one letter commands accompanied by the appropriate parameters as described below. Each command letter must be preceded by a double carriage return and is delimited by a space, tab, or single carriage return. These characters may be used interchangeably for formatting purposes. Generally, however, sets of parameters modifying a single command should be on separate lines for clarity. The non-printing characters space, tab, and carriage return must be represented respectively by s, t, and c when used as parameters. The prime symbol ' following a character specifies anything but that character.

Example: t' means any character but tab, or "not-tab."

General Description

A.8 Input Media

i allows the user to specify an input media. Legal parameters magtape, dectape or papertape. The small letter m, d, or p must appear but a longer string may appear for clarity. The

[2] The left byte is reserved for special system use.

command is terminated by two carriage returns. In the case of mag tape input, all data up to an end of file will be processed. If the command i does not appear in the commands to Master File Generator, paper tape input is assumed.

Example: i magtape

A.9 Input Code

The single letter command c allows the user to specify an input code. Legal parameters are bcd, or dura. The small letter b or d must appear but a longer string may appear for clarity. The command is terminated by two carriage returns. If the command c does not appear in the commands to Master File Generator, Dura code is assumed. Output is always in Inforonics Master File Code.

A.10 Fixed Field

Fixed field recognition of items may not be mixed with any of the other recognition methods. The only other command that may be used in conjunction with the fixed field command is o to specify an output device. If other commands are stated, they are ignored. Input is assumed to be from mag tape in BCD code. The single letter command f should appear at the left hand margin following two carriage returns. It is separated from its first parameter, the record length, by a tab or space. Succeeding sets of parameters are on separate lines. They represent the item number and its beginning and ending character positions.

Example:

```
f   120
      1     0     19
      2    20     44
      4    60     64
```

The example above states that each record is 120 characters long and contains three items. Item 1 starts at character position zero and extends to character position 19. Item two, specified on a separate line, starts at character position 20 and extends to character position 44. Item 4, on a separate line, starts at character position 60 and ends at character position 64. Extra spaces or tabs may be used to format the tables.

A.11 End of Record

e allows the user to specify an end of record. The parameter is a unique delimiter sequence made up of 1, 2 or 3 identical characters. If the delimiter sequence is three identical characters, three or more of these characters will be accepted as an end of record. If no end of record is specified, the Dura code delimiter sequence ↵□□ will be assumed.

A.12 Delimiter Sequences

d allows the user to specify delimiter sequences for specified items. The parameters specify a delimiter sequence, an item number for which this delimiter sequence is legal and the new item number. Note that t, c, and s are used for the nonprinting characters tab, carriage return and space.

```
Example:    d    ct    4    1
                 cc    1    1Ø
```

The example specifies that a delimiter sequence of carriage return, tab if found in item 4 signifies the start of item one. The sequence carriage return, carriage return if found in item 1 signifies the start of item 10.

A.13 Delimiter Sequences for Printing Tags

p allows the user to specify the delimiting sequences (flags) that will introduce printing tags. Several separate parameters may be placed on one line. The command is terminated by 2 carriage returns.

```
Example:    p    ct'
```

The example states that delimiter sequence carriage return, not-tab may be used to flag printing tags.

A.14 Printing Tags

Printing tags and the item number they represent are specified by the command t. The parameters specify a printing tag, a delimiting character for the printing tag, and a new item number.

```
Example:    T    1     s    1a
                 1a    s    1b
                 1b    s    1c
```

This example states that printing tag 1 indicates item 1a; tag 1a indicates item 1b and tag 1b indicates item 1c. The printing tags are separated from the data by a space.

A.15 Line Count

Line count takes precedence over delimiting sequences. The parameters specify a line count and a new item number. The line count is actually the number of carriage returns processed since the start of the record.

```
Example:    1     1      10
                  6      14
```

The example states that item 10 begins at the beginning of line 1 and is terminated by entering another item. Item 14 starts at line 6. The start of a new item recognized either by line count or a legal delimiting sequence terminates the item by beginning the next one.

A.16 Output Media

The command o is identical in usage to i except an output media is being specified. If no output device is specified mag-tape is assumed.

A.17 General Information

Lines beginning with other than these commands are ignored until 2 carriage returns are processed allowing for comments interspersed among the commands. (Note: it is wise to prefix comments with a character that is not a letter in case the command set of master file generator is expanded.)

Commands to the Master File Generator are prepared off-line on the Dura and are processed by the Master File Generator just before run time. The Master File Generator may be punched off after it has processed the commands.

A.18 Paper Tape Input

The following conventions should be followed when keying data on paper tape:

Character deletes are flagged by one or more backspaces. The number of characters to be deleted is indicated by as many slashes. Spaces may be placed anywhere between the first backspace and the last slash and are ignored.

Line deletes are indicated by a space slash sequence. The line up to and including the space slash is deleted.

Character and line deletes are legal only within a record. It is not possible to delete an end of record once it has been typed. The tape should be terminated by a stopcode.

Tabs may be used for formatting purposes and in delimiter sequences but they are not considered a legal character and are ignored within the text.

A.19 Mag Tape Input

Magnetic tape input assumes 6 bit characters. If the characters are packed then the unpacking should be handled in a special translate routine.

A.20 Size of Input Record

The input record including printing tags and delimiter sequences is limited to a maximum of 1500_{10} characters. The actual data may not be more than 3000_{10} characters including item terminators (76 codes). The KIDMAP is limited to 200_{10} characters.

A.21 Command Summary

Command	Meaning	Parameters
i	specify input media	m[ag tape] or d[ectape] or p[apertape]
c	input code	b[cd] or d[ura]
f	specify fixed field	length of fixed item item # *| beginning position| ending position
e	specify end of record	1 delimiter sequence
d	specify legal items for delimiter sequences	delimiter sequence | old item # | new item #
p	specify flags for printing tags	delimiter sequence
t	link printing tag and new item #	printing tag | delimiting character | new item #
l	specify line count	line count new item #
o	specify output media	m[agtape] or d[ectape] or p[apertape]
m	process MARC tape	none

---

*a | represents a legal delimiter: space, tab, or carriage return

A.22 Specs for Writing Special Translation Routines

The Master File Generator expects input in dura code. If a different code is to be input a special translation routine will have to be added in place of the dura translation routine. These routines consist of a table of codes that will be input and an algorithm to convert these codes to the Master File code.

A special translation routine, commonly called a "front end to the Master File Generator," may be linked with the Master File Generator without modifying it. The translation routine should translate directly into Master File Code, with the following exceptions: tab should be translated to 76; carriage return to 77. The character to be translated will be in the right byte of the AC on entry to the translate routine.

The translate routine should be called translate', and the initialization routine for the translate called translatinit'. The routine should be linked into core 1 in place of the routine durmfc.

The translate routine itself is called with a jda with the character to be translated in bits 10-17 of the AC. The subroutine should have 2 exits. Return 1 indicates that no translation can be made before more characters are input. Return 2 indicates that there are between 1 and 4 output characters excluding case shifts. The characters should be sorted in registers char' through char' +3. Each register should be set to 777777 when it does not contain a valid character. Case shifts are indicated for each character by setting bit Ø for an upper case character.

The symbol stopcode' should be set to contain the proper code. If, not set up it contains 13.

The registers slash', backspace' and space' should be set up with the proper codes if the character delete facility is to be used. To suppress this feature set backspace' to an impossible code such as 777777. If no set up slash' contains 10, backspace' 52 and space' 20.

A.23 Example of Input to Master File

Fig. A.1 shows the input data marked for keying. Fig. A.2 explains the tags. Fig. A.3 shows the input record after keying. Fig. A.4 is sample input table for Master File Generator. Fig. A.5 is a list of tags used in NELINET Master File. Fig. A.6 is KID and KIDMAP internal format.

Fig. A.1: SAMPLE WORKSHEET WITH DATA FIELDS TAGGED

821.69 10a
C84Xc Crabbe, George, 1785?-1857.
20 The life of George Crabbe, by his son: with an introd. by
Edmund Blunden. 30 London, Cresset Press, 1947.
40 xxx, 286 p. 20 cm. 51 (The Cresset library)

9/66

70 1. Crabbe, George, 1754-1832.

90 PR4513.C7 1947 92 928.2 94 48—22870*

Library of Congress (59f1) M

INPUT WORKSHEET

Publication Data

31

Key	Date 1	Date 2	Place	Name	Height
1 S	4 1947	4 ----	4 —	4 —	2 20

Language

41

Class	Lang.1	Lang.2
1 S	4 ENG	4 —

Publication Type

32

Biblio.	Form	Conf.	Juvenile	Suppl
1 —	1 M	1 —	1 —	1

Fig. A.2: EXPLANATION OF SAMPLE WORKSHEET

Variable Length Fields

10a=Person in main entry; delimiter ( ) before and after date used in filing
20 =Title; delimiter precedes by phrase
40 =Collation
70 =Subject heading
90 =LC call number
30=Imprint; delimiters indicate subfields
51=Series, untraced
92=Dewey decimal number
94=LC card number

821.69 10a
C84Xc Crabbe, George, 1783-1857.
20 The life of George Crabbe, by his son; with an introd. by Edmund Blunden. 30 London, Cresset Press, 1947.
40 xxx, 286 p. 20 cm. 51 (The Cresset library)

9/66

70 1. Crabbe, George, 1754-1832.
90 PR4513.C7 1947 92 928.2 94 48—22870*
Library of Congress [59f1] M

Fixed Length Fields

31=Publication data: S=single date; place and publisher codes have been omitted; 20=spine height in cm.
41=Language: S=single; ENG=English
32=Publication type: no bibliography is present; the work is a monograph and not a conference, juvenile work or sullpement

INPUT WORKSHEET

Publication Data

31

Key	Date 1	Date 2	Place	Name	Height
1 S	4 1947	4 ----	4 ---	4 ----	2 20

Language

41

Class	Lang.1	Lang.2
1 S	4 ENG	4 ----

Publication Type

32

Biblio.	Form	Conf.	Juvenile	Supp
1 ----	1 M	1 ---	1 ----	1

Fig. A.3: Input after Keying

```
94      ^^^8022870
31s     1947^^^^^^^^^^^^20
41s     eng^^^^
32      ^m^^
10a     Crabbe, George,< 1785<|1857.
20      The life of George Crabbe,< by his son:< with an introd. by Edmund
        Blunden.
30      London,< Cresset Press,< 1947.<
40      xxx, 280 p.  20 cm.
51      (The Cresset library)
70      1. Crabbe, George, 1754|1832.
90      PR4513.C7 1947
92      928.2
```

(Note: The vertical line in dates would be output on cards as a dash.)

```
...input tables to mfg for NEBHE

i          paper tape

c          dura

p          ct'

t          10a          t          10a
           10b          t          10b
           10c          t          10c
           10d          t          10d
           10e          t          10e
           10f          t          10f
           15           t          15
           20           t          20
           20c          t          20c
           25           t          25
           25m          t          25m
           30           t          30
           31s          t          29s
           31r          t          29r
           31n          t          29n
           31m          t          29m
           31q          t          29q
           32           t          32
           40           t          40
           40m          t          40m
           40i          t          40i
           40b          t          40b
           41s          t          41s
           41t          t          41t
           41m          t          41m
           41d          t          41d
           41c          t          41c
           50           t          50
           51           t          51
           60           t          60
           70           t          70
           71           t          71
           72b          t          72b
           72c          t          72c
           72d          t          72d
           72e          t          72e
           73           t          73
           74           t          74
           74t          t          74t
           75           t          75
           75a          t          75a
           75t          t          75t
           90           t          90
           92           t          92
           94           t          94

e          c□□

o          magtape

[stopcode]
```

Fig. A.4: Sample Input Table for Master File Generator

EXPLANATION OF FIGURE A.4

The command being specified is indicated by the letter in the margin. All other characters are the table itself. Commands are separated by a double carriage return.

The first two single entry tables i and c specify respectively that input will be from paper tape in Dura code. Actually these two commands need not be included because Dura input from paper tape is assumed. However, they may be included for clarity.

The printing tag command designated by p indicates to the Master File Generator program where it may expect to find item names. In the keying format used in this test item names and only item names appear in the margin. The single table entry ct' indicates that item names appear after a carriage return followed by a character other than a tab. The ' is used to indicate the absence of the preceding character.

The tag table, designated by t, lists the tag number and the corresponding item number. (Tag number and item number need not be identical.) Only a partial list of item names appears here. For a complete list see Figure A.5.

e defines the record terminator to be carriage return followed by □□. This terminator is assumed and the command is included for clarity.

o specifies that the data should be stored on magtape. Output code is always Master File Code. This command is also included only for clarity.

FIGURE A.5

MASTER FILE SET-UP

For: NELINET

ITEM NAME	ITEM NUMBER IN MASTER FILE	PRINTING TAG OR DELIMITER SEQUENCE
Personal name main entry	011261	10a
Gov't body main entry	011262	10b
Society or Institution main entry	011263	10c
Religious body main entry	011264	10d
Misc. corporate body main entry	011265	10e
Uniform title main entry	011266	10f
Conventional title	010500	15
Title	021200	20
Title main entry	021267	20g
Edition	020500	25
Date (original then copyright)	020952	29s
Date (reprint then original)	020951	29r
Date unknown	020945	29n
Multiple date	020944	29m
Date estimated	020950	29q
Imprint	031200	30
Publ. Type (bibl., form, conf., j, suppl.)	030200	32
Collation (no illus. or maps)	041200	40
Collation w/maps only	041244	40m
Collation w/illus. only	041271	40i
Collation w/both	041262	40b
Language: single	040122	41s
Translation & original	040123	41t
Multiple language	040144	41m
Dictionary	040164	41d
Grammar	040167	41g
Series traced as is	051200	50
Series not traced or differently	050100	51
Notes	061200	60
Subject tracings	071200	70
Added entry, personal	070100	71
Added entry, government	070262	72b
Added entry, society or institution	070263	72c
Added entry, religious body	070264	72d
Added entry, miscellaneous corp. body	070265	72e
Added entry, uniform title	070300	73
Added entry, title specified	070400	74
Added entry, title as in 20	070423	74t
Series tracing author & title	070561	75a

FIGURE A.5 (Continued)

MASTER FILE SET-UP

For: NELINET

ITEM NAME	ITEM NUMBER IN MASTER FILE	PRINTING TAG OR DELIMITER SEQUENCE
Series tracing title only	070562	75t
Copy statement (2nd LC call number)	101200	80
National bibliography number (up to 15 characters)	100361	83a
National bibliography number (over 15 characters)	100362	83b
LC call number	111200	90
Partial LC call number	111245	90n
Dewey class number	110200	92
LC card number	110400	94
Original cataloging, Connecticut	110463	94c
Original cataloging, Maine	110465	94e
Original cataloging, Massachusetts	110444	94m
Original cataloging, New Hampshire	110445	94n
Original cataloging, Rhode Island	110451	94r
Original cataloging, Vermont	110425	94v

FIGURE A.6

KID AND KIDMAP INTERNAL FORMAT

This figure shows the sample card in internal format. ↑ represents upper case shift, * represents space. 76's are item terminator characters. 777777 is a record terminator.

The first line of the KIDMAP states that item 94 comes first. The second word is the relative word position of the item to the beginning of the data. Word position numbering is octal and begins at zero.

KIDMAP

Item: LC card no.	9	4	
Starts at word			0
Item publ. date	3	1	s
Starts at			4
Item: lang. data	4	1	s
Starts at			12
Item: publ. type	2	9	s
Starts at			15
Item: author	1	0	a
Starts at			17
Item: title	2	0	
Starts at			32
Item: imprint	3	0	
Starts at			65
Item: collation	4	0	
Starts at			101
Item: series, untraced	5	1	
Starts at			110
Item: subject	7	0	
Starts at			120
Item: L.C. call no.	9	0	
Starts at			133
Item: Dewey no.	9	2	
Starts at			141
	E	N	D
Total char. in KID		4	51

KID

Word no. (in octal)			
0	△	△	△
1	4	8	0
2	2	2	8
3	7	0	76
4	1	9	4
5	7	△	△
6	△	△	△
7	△	△	△
10	△	△	△
11	2	0	76
12	e	n	g
13	△	△	△
14	△	△	76
15	△	m	△

KID

Word no. (in octal)			
16	△	△	76
17	↑	C	r
20	a	b	b
21	e	,	*
22	↑	G	e
23	o	r	g
24	e	,	<
25	*	1	7
26	8	5	<
27	-	1	8
30	5	7	.
31	76	76	76
32	↑	T	h
33	e	*	l
34	i	f	e
35	*	o	f
36	*	↑	G
37	e	o	r
40	g	e	*
41	↑	C	r
42	a	b	b
43	e	,	<
44	*	b	y
45	*	h	i
46	s	*	s
47	o	n	:
50	<	*	w
51	i	t	h
52	*	a	n
53	*	i	n
54	t	r	o
55	d	.	*
56	b	y	*
57	↑	E	d
60	m	u	n
61	d	*	↑
62	B	l	u
63	n	d	e
64	n	.	76
65	↑	L	o

FIGURE A.6 (Continued)

KID AND KIDMAP INTERNAL FORMAT

66	n	d	o
67	n	,	<
70	*	↑	C
71	r	e	s
72	s	e	t
73	*	↑	p
74	r	e	s
75	s	,	<
76	*	1	9
77	4	7	.
100	<	76	76
101	x	x	x
102	,	*	2
103	8	6	*
104	p	.	*
105	*	2	0
106	*	c	m
107	.	76	76
110	(	↑	T
111	h	e	*
112	↑	C	r
113	e	s	s
114	e	t	*
115	l	i	b
116	r	a	r
117	y	)	76
120	l	.	*
121	↑	C	r
122	a	b	b
123	e	,	*
124	↑	G	e
125	o	r	g
126	e	,	*
127	l	7	5
130	4	-	1
131	8	3	2
132	.	76	76
133	↑	P	↑
134	R	4	5
135	l	3	.
136	↑	C	7
137	*	l	9
140	4	7	*
141	9	2	8
142	.	2	76
143	77	77	77

APPENDIX B: SORT KEY GENERATOR PROGRAM, SK-1

The Sort Key Generator Program will input and output on magnetic tape. This program will read information in NEBHE file form, repeat selected items from the internal fields and tag them on at the beginning of the record.

B.1 Sort Keys

The program will be general purpose: any item or combination of items may be specified. Each item is placed in a specified sort field, either right or left justified. Conversion to BCD may be done if the records are to be sorted on IBM machines. Case shifts, accents, leading articles, and punctuation may be stripped, and any other specified characters may either be stripped or replaced by some other character. If desired, all characters up to the first case shift (or any other character) may be omitted, and one or more terminating characters may be specified.

All or part of the internal fields may be carried along with the record, in the same format as the input record. The storage address pointers are rewritten. Items may also be inserted in new internal fields.

B.2 Commands

The following commands are recognized by the program:

i	item (generates separate records for multiple items)
o	item (uses only the first in a series of multiple items)
F	field (left justified)
J	field (right justified)
v	verbatim field (modified KIDm and KID)
g	insert item in verbatim field
c	character code conversion

r replace character

d delete character

s strip case shifts

p strip punctuation

a strip accents

l strip leading articles

t terminate field with first occurrence of character

b begin field with first occurrence of character

e execute command line

n end of table - output record

z end of table - add record length and output record

The command table will be divided into "lines," each starting with i, o, or v and ending with e. Each line refers to a specific field. Commands such as d, F, c, and l may fall within an "i" or "o" line, and they refer to that line only. A "v" line must follow the last "i" or "o" line, to specify the end of the sort field. (If no verbatim field is desired, the line would be: v end of field , e. An n or z follows the "v" line. Specific commands must be separated by spaces (or CR's). Commas are optional.

B.3 Sense Switch Options

SS1 Stops the program after current record. Next DECtape block is typed. By resetting the test word, the program can be made to continue from any block.

SS2 Read in processed buffer rather than basic command table.

SS3 Punch out processed buffer.

SS4 Read new DECtape.

SS5 Type out starting block of each record as it is read.

B.4 Example

Suppose one has a group of items from library cards that have the following numbers.

item #1 call number

2 author

3 title

4 subject

One might, in generating a book list, wish to sort by subject, by author within a subject, and by title if there is more than one book by an author. These items should be stripped of case shifts, etc., and converted to BCD. Subject headings rarely have leading articles so they do not need to be checked. Let us assume that if a book has more than one title, only the first should be used. All four items are to be carried along for possible printing, and the item "August index" is to be inserted.

The desired output record would then be:

record-length	subject	author	title	KIDm and KID
0-5	6-50	51-90	91-150	150 variable length
character position				

A possible command table to produce such a sort key would be:

```
i 4, F 6 50, p, a, s e
i 2, F 51 90, p, a, s, l, r 54 00, e
o 3, p, a, s, d 77, F 91 150, t 54, e
v 151 1 2 3 4 g 5. Aug,    . Index., e
z
```

APPENDIX C: EDIT-MERGE PROGRAM, EM-1, EM-2

The program requires two inputs and two outputs (two on DECTAPE - two on magtape). The master file input must be in NEBHE master file format. The transaction file, which contains either editing instructions or records to be merged with the master file (or both), must also be in NELINET master file format. Each file will be ordered according to LC number.

C.1 Input-Output

The two input tapes may contain an arbitrary number of records per tape block. It is not necessary to specify the number. One may specify the number of records to be written on each block of each of the output tapes. One may also specify whether any given tape is to be rewound, started at a specific block, or started at the end-of-file mark. The specifications are made on the rule tape, to be described later.

C.2 Modes

The program may operate in any of five modes, which are selected by starting location.

Mode zero is the edit mode. Master file records are edited according to the instructions carried within the transaction record which has the same classification number (the format of the transaction record will be described later). Master records which are not matched by the transaction file are output without editing.

Mode one is the edit-merge mode. It is identical to mode zero, except that transaction records which do not match any master records are merged into the output file.

Mode two is a pure merge mode. An error indication is given if a master record and a transaction record have the same classification number.

Mode three is the divide mode. It requires two output units A and B. A master record which does not have a matching transaction record is output on unit A. A master record which does have a match is first edited and then output on unit B.

Mode four is in-out mode. One block of records is read from the single input tape. A specified number of records are then written onto the output tape. This mode would be used, for example, to convert a file containing one record to the block to a file with four records per tape block.

C.3 Rule Tape

At the beginning of the run a rule tape may be read which conditions the program to perform certain functions. The rules are:

1. match - specifies which item number to use in comparing the master and transaction records (item 1 if no match rule is present).

2. copy - specifies which items to copy from a transaction record to the corresponding record.

3. delete - specifies which items to delete from all master records, and which to delete only from those records which are matched by transaction records.

4. input-output - specifies which input files are on DECTAPE and which are on magtape, as well as where the output files are to be. It also specifies whether a given tape is to be rewound, started on the end-of-file-mark, or started at a given block.

5. multiple outputs - specifies how many records are to be written on each block of each of the output tapes.

Editing rules pertain to all records in the master file. Instructions to edit a specific master record are carried in the transaction file.

6.4 Transaction Records

A given transaction record may contain editing instructions, or be intended to be merged, or both.

Item numbers in the MAP section of the NEBHE Master File Record which are greater than 60_8 specify editing functions. For example, item number 61_8 means to delete an item from the corresponding master record. The entry in the transaction record tells which item to delete. Similarly, higher item numbers each specify an editing function, while the corresponding transaction record contains whatever specific information is needed to carry the editing out.

The assigned code numbers are:

item 61 - delete an item.

item 61 - insert an item. The text to be inserted, as well as the item number it is to be given are contained in the KID of the transaction record.

item 64 - search for a string of characters and replace it by another string of characters, if found.

item 65 - same as item 64, only an error return is given, if the string is not found.

item 66 - contains the replacing string required by functions 64 and 65.

item 67 - specifies that the master record is to be output a certain number of times on some output unit (or specifies that the record is to be deleted). This command overrides the normal output conventions for the given mode.

item 70 - output the transaction file record a given number of times on some unit. This command also overrides the mode conventions.

Specific formats of these commands will be described later.

The transaction file may be produced from paper tape just like any other file. Certain delimiter sequences will be defined to specify given editing functions. The user will follow these sequences with whatever extra information is needed (e.g., the number of the item to be deleted). The analyzer program will then produce a KIDm-KID file in the proper format from this tape.

APPENDIX D: FILE PRINTOUT PROGRAM, FP-1

The file printout program reads records from magnetic or micro tape and outputs them in readable format. The output may be either on the typewriter, or on punched paper tape (which can be listed via flexowriter at a later time).

The input records are in standard NEBHE master file format. These records are converted from master file code to FIO-DEC code. They are then reformatted into a readable format and output onto the proper medium.

The program is also capable of outputting records which exist in any format (such as might be written by other computers outside of Inforonics).

In such a case, the output is in octal rather than binary coded decimal format. This means that any type of existing code may be put out without the need for conversion to FIO-DEC format (the standard BCD code of the PDP-1 computer).

FP-1 may be used in automatic or manual mode. That is, records may be read and output automatically in a continuous fashion, or they may be examined individually and put out when desired. In manual mode, the reading of a record is initiated by hitting the "start" switch. It may then be output by hitting the "continue" switch. One might step by the first 20 records for example, by hitting the "continue" switch. One might step by the first 20 records for example, by hitting the "start" switch 20 times. One could then begin printing the remaining records in either mode.

Also available is a record selection capability. That is, the user can select individual master file records for output by typing in the tag of a given item in the record, followed by the identifying information for that item. Thus, a user could search for a record which contains a given call number (identified by an associated tag) by typing in the tag followed by the call number.

The various modes of operation may be easily controlled by using the sense switches on the computer console. The function for each sense switch (when set to "on" position) is as follows:

SS1 - Output on paper tape rather than typewriter.

SS2 - Magnetic tape (Unit 1) in even parity rather than odd.

SS3 - Input is from Dectape (Micro tape) rather than magnetic tape.

SS4 - Input records are not in master file format. Output to be in octal.

SS5 - Will cause a stop code to be punched in paper tape followed by a halt. (SS1 must also be on.)

SS6 - Record select mode is to be used. Typewriter input by the user will determine whether the "search" or plain "manual" mode will be used.

If several identical records are to be put out successively, only the first is printed. The word "same" occurs in place of each following identical record.

The two output formats occur as shown:

Master File Output Format

```
01      1
011     conn.
021     1
end     000017

01      1
02b     ref
03b     HM      51      .H64
10      Horton, Paul B
20      Sociology <[by] Paul B. Horton [and] Chester L.
          Hunt.<
30      New York<McGraw-Hill [1964]<<
40      x, 582, p. illus., diagr. 25 cm.
60      Bibliography: p. 537-562.
70      1. Sociology.
71      I. Hunt, Chester L.,<joint author.
90      HM1.H64
94      xxx63017953
09b     conn.
11b     Horton, Paul B
12b     Sociology
13b     1964
end     000523

same

01      1
04b     I. Hunt, Chester L.,<joint author.
02b     ref
03b     Hm      51      .H64
```

```
10      Horton, Paul B
20      Sociology<[by] Paul B. Horton [and] Chester L.
          Hunt.<
30      New York,<McGraw-Hill<[1964]<<
40      x, 582 p. illus., diagrs. 25 cm.
60      Bibliography: p. 537-562.
70      1. Sociology.
71      I. Hunt, Chester L.,<joint author.
90      HM51.H64
94      xxx63017953
09b     conn.
11b     Horton, Paul B
12b     Sociology
13b     1964
end     000572

2       2
011     conn.
021     1
end     000017

02      2
03b     HM     51     .H64
07b     v.1
08b     c.1
end     000052

02      2
03b     HM     51     .H64
07b     v.2
08b     c.1
end     000052
```

Octal Output Format

```
010001 120100 000000 120262 000001 120362 000003 011200 000013
010011 021200 000021 031200 000046 041200 000063 061200 000076
010021 071200 000107 070100 000114 111200 000131 110400 000136
010031 121162 000142 010162 000144 010262 000152 010362 000156
010041 654564 000523 017676 516566 767676 747074 442020 202005
010051 012020 202073 747006 042020 767676 747046 512346 453320
010061 744761 244320 746276 742246 637146 434667 301674 556230
010071 552074 476124 432074 627320 747046 512346 452074 556145
```

APPENDIX E: THE CATALOGING SERVICE PROGRAM

E.1 Introduction

The Cataloging Service Program generates magnetic tape records which contain the information necessary to drive the line printer program. This latter program performs the processing necessary to convert the magnetic tape records into card and label images which are output onto the proper medium (i.e., paper tape or hard copy). Both spine labels and book pocket labels are created in addition to the catalog cards.

The Line Printer Program, therefore, may be thought of as a post-processor for the Catalog Service Program. It bears the responsibility of actually printing the necessary card, label, and pocket label information.

Input to the Cataloging Service Program (hereafter referred to as the CS program) comes from two sources.

1. Individual library requests which are contained on micro (dec) tape.

2. A catalog data file on magnetic tape.

The first input source, the micro tape requests, contain the information which is sent via the teletype network from the individual libraries. This includes the name and other identifying information for the sending library, the Library of Congress card number, the local call number, and copy and volume data for the given book. Also contained is certain information relating to the number of cards, labels, or pockets desired. This data is placed onto the micro tape by an identification tag for each item and stores it on micro tape in a standard Inforonics format known as Master File Format.

The second input source, the magnetic tape, contains cataloging information, which comes from the Library of Congress MARC project. MARC tapes, obtained by Inforonics, are processed through the same program which creates the micro tape. This time, however, the master file with its tagged items is stored on a new magnetic tape which actually serves as CS input. Each magnetic tape record contains the cataloging data necessary for one book. The records are in ascending numerical order according to their Library of Congress card numbers.

E.2 Actual Machine Format of Input

Data from both the micro tape and magnetic tape is stored in standard Inforonics Master File Format. This means that each item of information (such as an author's name) bears an identifying

tag. All of the tags are stored at the beginning of the tape (or machine record). Each is accompanied by a machine word which gives the relative address of the associated item (which occurs in the last part of the record). The first part of the record is known as the MAP. The second part, where the items are, is known as the KID (Key Item Data). The MAP is terminated by the word END, which in turn is followed by a count of the number of characters in the KID.

The KID starts immediately after the count. Items of information occurring in the KID are variable in length. Each is terminated by one, two or three 76's (enough to fill out a whole or remaining fraction of a computer word). The KID itself is terminated by a computer word consisting of all sevens (777777).

The relative address mentioned above in the MAP description refers to the distance or number of computer words between the start of the KID and the start of the actual item.

This scheme allows any item to be searched for (by its tag), and located by its relative address within the KID. A sample machine record follows:

MAP	0 1 L	Tag 1L
	0	Rel. loc.
	1 0 A	Tag 10A
	2	Rel. loc.
	2 0	Tag 20
	5	Rel. loc.
	E N D	Terminator
	2 4	Char. count of KID
KID	M A I	1st item
	N E 76	
	A U T	
	H O R	2nd item
	76 76 76	
	T I T	3rd item
	L E 76	
	77 77 77	

E.3 Actual Tags Used by the CS Program

Tag	Octal	Meaning
1	120100	Identifier - Cards
2	120200	Identifier - Labels
3	120300	Identifier - Pockets
1b	120162	Branch Name
2b	120262	Shelf Name
3b	120362	Call No.
4b	120462	Overprint - Added Entries Subject Entries
5b	120562	Shelf List Information
6b	120662	Oversize Indicator
7b	120762	Volume Number for Labels and Pockets
8b	121062	Copy Number for Labels
9b	121162	Library Symbol (Name)
1L	120143	*Library Name for Blank Record
2L	120243	*Library Code for Blank Record

*Used to designate library destination of output.

10	011200	Standard MARC usage.
15	010500	"
20	021200	"
25	020500	"
30	031200	"
40	041200	"
50	051200	"

Tag	Octal	Meaning
51	050100	Standard MARC usage.
60	061200	"
70	071200	"
71	070100	"
72	070200	"
73	070300	"
74	070400	"
74t	070423	"
75	070500	"
83	100300	"
90	110200	"
92	110200	"
94	110400	"
1r		
1r	120151	L.C. Card No.
2r	120251	Library Code
3r	120351	Suppress Book Labels
4r	120451	Suppress Pocket Labels
5r	120551	Suppress Catalog Card Set
6r	120651	Extra Main Entry Cards
7r	120751	Local Call No.
31r	030151	Main Library - Copy & Vol. Info.
32r	030251	Branch No. 1 - Copy & Vol. Info.
33r	030351	Branch No. 2 - Copy & Vol. Info.

E.4 Operation of the CS Program

The CS program reads the first request record from micro tape. It checks to see that all necessary information is present. It then searches the magnetic tape to find the proper matching record. Records match when the L.C. card numbers are identical. If no match is found, an error message is printed, and the next request record is read and a new search initiated. This process continues until all requests are processed.

When a match occurs, the CS program begins to generate the information needed for output. Certain items, for example, must be broken down into smaller items, or into entirely new items. Tag 20, the title and author statement must be scanned under some circumstances for the title added entry portion only. This section is extracted and stored as a new item with a new tag which will eventually be put out as an overprint statement on a title added entry card. This process is repeated many times for other items. The end result means that many items, each with its own tag, exist in many different parts of core memory. Some were originally read in from micro or magnetic tape while others were created artifically. Some of the newly created tags are used internally (within the CS program) only. These are never used for output formatting, but they are used in internal searches. It is possible for the CS program to look up various items by their individual tags but put them out under one tag. Items 71-75, for example, might be put out as tag 4b (the overprint tag) on successive added entry cards.

Since items would be widely scattered in the memory of the computer, it was necessary to devise a convenient searching method. The CS program, therefore, creates a table known as the TGSF (tags found) table. This table is made up of a series of 3-word identifiers for each item in core. It is terminated by a word of all 76's. The three words have the following meanings.

1st word - the tag

2nd word - the absolute core address of the item

3rd word - the length (in computer words) of the item

The TGSF table is generated by a subroutine known as ASCAN (which scans the micro and magnetic tape maps and KIDS). Additions are made to the TGSF table by individual subroutines each time a new item is created.

The TGSF table may be searched by a subroutine called BSCAN. This subroutine indicates how many of a given tag exist (from 0-30), and records the addresses of each 3-word TGSF identifier for the given item.

Another important table is the library profile table. This contains coded information with regard to oversize specifications and card requirement specifications for each of the individual libraries. (See Appendix C)

Finally, there exist several tables known as the generation tables. Each is used in the generation of a card, label, or pocket label. Each also has a 3-word identifier for individual items as follows:

1st word - Internal tag of this item

2nd word - If negative - ignore this item

If zero - pick up all occurrences of this item

If greater than zero - pick up only this occurrence of this item

3rd word - Output tag for this item

The CS program, after reading its two input tapes, generating the TGSF table, and creating all needed items is ready to begin output processing.

By using BSCAN as often as needed, the CS program can determine what tags are available for a given request. The proper generation table is selected (and in some instances, dynamically altered).

Then a subroutine called KIDD, by using the TGSF and proper generation table, produces a map and KID suitable for a card, label, or pocket (whichever the case may be).

A tape writing subroutine outputs the record onto magnetic tape. Each record is output the proper number of times according to counters which were set up by using the library profile table in combination with certain items which occurred on the micro tape test record.

CS processing proceeds from catalog cards to spine labels to pocket labels in that order. Main library requests and branch library requests are processed individually. One micro tape request can contain one main library, and one or two branch libraries (future programming will allow unlimited branches on a single request). Processing continues until all micro tape requests are finished.

If error conditions are detected along the way, appropriate error messages are printed on the typewriter. Critical errors such as missing L.C. card numbers on a request record cause that record to be skipped.

The program is basically table driven, that is, it operates on a series of tables which designate tags, output conditions, etc. Likewise all major tasks are handled by independent subroutines. Thus, by altering a table or dropping or adding a subroutine, major changes can be accomplished without disturbing the overall program.

APPENDIX F: LINE PRINTER PROGRAM

The Line Printer Program formats output coming from Master files and magnetic tape to punched paper tape for Dura or magnetic tape for line printer*. This program was written for NELINET to produce book labels, pocket labels, and catalog cards. Its generality makes it useful to format all types of output from Master Files.

The Line Printer Program formats the output according to a set of symbolic tables entered at the beginning of a run. Thus the same program may produce all the above outputs as well as variation of them simply through a slightly varied set up procedure.

The tables contain two types of commands: general -- referring to all items printed, and specific -- referring to a single item. Commands are introduced by two carriage returns; parameters are separated from the command and each other by the delimiter characters space, tab and carriage return. When text is required for a parameter it is set off by two periods. Carriage returns, tabs, and spaces within the two periods are not treated as delimiters but text. A command may be terminated at any time by two carriage returns, and the parameters not specified will be initialized as described below. Parameters missing in the middle of a command are denoted by a dash. Each general command may be used only once. General and specific commands may be intermixed as long as the specific commands remain in proper order (output order). The tables are entered from Dura-code paper tape at the beginning of a run. All numbers, including item numbers are decimal.

F.1 General Commands

General commands vary in number of parameters. The exact format for each is described in the individual sections below.

C-Library Cards followed by three item numbers as parameters representing the main entry, short title and date. This command assumes the output is to be library cards and sets up the program to handle gutter information. The three item numbers refer to the handling of extension cards.

---

*Line Printer output section of this program is unspecified as yet.

If extension cards are necessary the text "cont. on next card" will be right justified on the line below the last line of the card. (See command) All the extension cards will have the main entry on line 4 of the next card truncated if necessary to one line and followed by ... in case of truncation. The short title follows and is truncated if necessary (as above) to fit on line 5 along with the date and (card nn) right justified. The extreme case is diagrammed below:

line 4: Main Entry_____...
line 5: Short Title _____... 1963 (card nn)

The card number always appears on line 15.

D-Dura code. No parameters. Output is paper tape in Dura Code. If this command is missing output is to mag tapes for line printer.

P-page length followed by two parameters. The first indicates number of lines top of form to top of form. The second indicates the last line of the page to be used for regular data. Certain items such as classification numbers etc. may be placed below the last line of the page if the line number is specified without interrupting the continuation of the regular data onto the next page.

l-lists. No parameters. Indicates that as many records as possible are to be put on a page.

m-margins. Followed by four parameters that define the margin for the gutter and card. If only two parameters are present they are taken as margins for the page.

s-select. Followed by an item number. The Line Printer Program processes only those records that begin with the designated item no. The absence of command indicates that all items are to be processed.

t-text. Followed by three parameters indicating line number, page number and text string. This command would generally be used for inserting headings, footnotes, dates, etc.

F.2 Specific Commands

There is a single specific command for each item number; these must appear in output order. The format is:

1	2	3	4	5
item #	line #	page #	starting column #	starting col. (continuation)

6	7	8
leading message	trailing message	missing message

The above format is only a suggestion as tabs, carriage returns and spaces may be used interchangeably. The command may terminate at any point and the omitted parameters will be preset to the values specified below. Missing fields are indicated by a dash bounded by two delimiters.

(1) item number (decimal)

(2) specifies absolute line location, a dash is put at current line location if missing.

(3) Followed by a number indicates what page (card) this item is to appear on. A blank (-) indicates in natural order. a indicates all.

(4) Specifies starting column number. R in this field means right justify. If this field is missing the text will start in the next free character position.

(5) Same as (4) above except applies to all lines except the first one.

(6) Leading message - the text between two periods is inserted directly before the message.

(7) Trailing message - the text between 2 periods is inserted directly after the message.

(8) If the item is missing for any record the text between two periods is taken instead.

In messages two types of spaces may be used. The normal space will be dropped if at the beginning of the line. Fixed spaces (▲) will always be left in. Both spaces appear as a normal space on output.

If an item is designated to start at a certain line number and the previous item is not completed the rest of the previous item will be lost.

F.3 Summary of Commands

General

```
      library cards
            c        main entry #      short title #    date #
Dura
            d
lists - multiple items on a page
            l
margins
            m   left margin   right margin
            m   l. gutter     r. gutter    l. margin   r. margin

Page length
            p       total lines #              last line #

Select
            s       item #

Text (used for headings, footnotes etc.)
            t      line #     page #        text.
```

Specific

item #	line #	page #	Starting Column #	Starting Col. Cont. #	leading message	trailing message
missing message						

APPENDIX G: REQUEST PROCEDURES

A transmittal form for requests for cards and labels has been designed. This form has been found to be slightly cumbersome in its design and is being redesigned for use in Task 4, operation of a pilot demonstration. In redesigning this form more burden is being placed on the programming effort. The plan is to write a preprocessing program that will translate library format shelf list information into machine format. For the purpose of testing the system, though, the originally designed form will fulfill the requirements.

G.1 Preparation of Card and Label Request Sheets - by Cataloger

tag 1r — L.C. card number. Write in this space the Library of Congress card number. Include prefix if it exists.

tag 2r — Participating library. The line will be filled in prior to your receiving the sheet. No action is needed.

tag 3r — Suppress book labels. If book labels are not desired place a check mark on this line.

tag 4r — Suppress book pocket labels. If book pocket labels are not desired, place a check mark on this line.

tag 5r — Suppress catalog card set. A check on this line will suppress the creation of catalog cards.

tag 6r — Extra main entry cards. If one wants more main entry cards than the standard set for this request then indicate the number wanted on this line.

tag 7r — Local call number. If one wishes to have some other call number on the catalog cards, book labels, and book pocket labels, then write it on this line. Use a slash to indicate new lines. Do not include size or branch information with local call number.

Ex.: 940.4/C776t will be printed on the card as

940.4
C776t

CARD AND LABEL REQUEST

L.C. Card Number (1r) _____

Participating Library (2r) _____

Suppress book labels (3r) _____

Suppress book pocket labels (4r) _____

Suppress catalog card set (5r) _____

Extra main entry cards (6r) _____

Local call number (7r) _____

Copy - volume - branch - shelf information

LOCATION	COPY - SHELF STATEMENT	VOLUME
MAIN		

Copy-Volume-Branch-Shelf Information

The requestor will write in here the shelf list information (copy-volume-location). The requestor can use their normal annotation in this space and it will then be interpreted by the operator for transmission.

G.2 Preparation of Card and Label Request Sheets - by Teletype Operator

tag 1r Library of Congress Card Number

When the L.C. card number is written on the sheet by the cataloger it may be in one of the following forms:

a. MPA66-1
b. MPA66-000001
c. A66-12
d. 66-25437 rev.

When the L.C. card number is prepared for transmission it will take the following form:

prefix date serial number

Prefix: The prefix may or may not exist and in the case where it does exist it will contain up to three alphabetic characters. If the prefix does not exist the following characters will be put in its place:

@@@

If the prefix consists of a single character then it is right justified: @@char.

If the prefix consists of two characters then it is right justified: @charchar

Date: The date will always consist of two numeric characters.

Serial Number: The serial number part of the L.C. card number will always consist of 6 numeric characters where the numbers are zero filled right justified.

1 would be typed as 000001

49 would be typed as 000049

12345 would be typed as 012345

123456 would be typed as 123456

Referring to the first paragraph the examples would take the following form:

a. MPA 66-12

Result: MPA66000012

b. MPA 66-000012

Result: MPA66000012

c. A66-12

Result: @@A66000012

d. 66-12

Result: @@@66000012

tag 2r Participating Library.

This line will be pre-filled on the Card and Label Request sheets.

tag 3r Suppress Book Labels.

The cataloger will check this line if he wishes to suppress the request for book labels. The operator will not have to change this to any other marks for typing.

tag 4r Suppress Book Pocket Labels

No special conversion has to be made if checked.

tag 5r Suppress Catalog Card Set

No special conversion has to be made if this line is checked.

tag 6r Extra Main Entry Cards

If the cataloger wishes to request extra main entry cards then he will write the amount in on this line. The operator does not have to do any special conversion of this information.

tag 7r Local Call Number

If the cataloger wishes to put a local call number on the catalog cards then he will fill in this line. He is limited to six characters between slash marks. If there is more than six characters between slashes then the operator should return the sheet to the cataloger for correction. When this call number is typed the upper case alphabetic characters are represented by typing a dollar sign before the alphabetic. Except for this convention the call number will be typed (including slashes) exactly as represented.

tag 31r Location copy-shelf statement volume.

This information will probably be the most difficult to transcribe into machine acceptable form. The cataloger will have written in above the field the location of the books and the number of copies and volumes involved. This information is needed to provide the proper number of catalog cards, book labels, and book pocket labels.

The operator will have to encode this information into a rather rigid format for transmission. The best way to describe the encoding is to use it in hypothetical cases and go through each case separately.

Case 1

The cataloger has written the following:

Copy to main.

The encoder will fill out the sheet in the following manner:

31r MAIN

This will probably be the most common case so that the information has been prewritten on the request sheets.

Case 2

The cataloger has written the following:

c.1 to main
c.2 to reference collection

The encoder will do the following:

a. Look at appendix 1 to see if "reference collection" is a shelf location or a branch library. If it is a branch library it will mean both a tag 31r and a tag 32r will have to be used. In this case "reference collection" - using the University of Massachusetts branch and shelf location information - is a shelf location. The operator will then construct the statement:

31r MAIN; c.1, c.2 $REF

where

31r = tag

MAIN = main library

; denotes end of location information

c.1 = copy one

, separates copy information

c.2 = copy two

$REF = abbreviation for "reference location" ($ denotes capitalization of following character)

Case 3

The cataloger has written the following:

2 copies to main (c.1 & c.2)

The encoder will do the following construction:

31r MAIN;↑c.1-2

In this case the only thing new is:

↑ = enumerate the information following.

c.1-2 = the spread of copies to be enumerated.

Case 4

The cataloger has written the following:

1 copy to main c.1

2 copies to Physics c.2-3 Vol. 1-3

3 copies to Business c.4-6

The operator will convert this to the following:

31r MAIN; c.1,↑c.4-6 BU$S;↑V.1-3

32r $PHYS;↑c.2-3;↑V.1-3

In this case two tags (tag 31r and 32r) were used as both the main library and a branch library are involved. In the tag 32r a location was added, PHYS, which is the abbreviation for the University of Massachusetts Physics branch. In tags 31r and 32r new information introduced is the volume concept:

↑= enumerate the following volume information.

v.1-3 = the volume to be enumerated.

The above cases cover all of the variations the operator is liable to encounter.

In order to reiterate the above coding the following is given:

31r main; c.1,↑c.2-4, c.5 RE$F;↑V.1-3

31 r = technical processing tag

main = location is main library

; = separator of location and copy-shelf statement

c.1 = copy one

, = separator of copy information

↑ = enumerate the following information

c.2-4 = copies two through four

, = separator of copy information

c.5 = copy five

RE$F = this copy (copy five) is to go to "reference collection"

; = separator of copy-shelf statement and volume information

↑ = enumerate the following information.

V.1-3 = volumes one through three.

APPENDIX H: COMPOSITION OF LIBRARY PROFILE TABLE

Information in the Library Profile Table is stored by library so that as more libraries may be added to the system, the table may quite easily be expanded. Each library is assigned to seven successive locations in core; the initial one of each block is accorded a name which is an abbreviation of the name of the library. For example, the library system of the University of New Hampshire is assigned a block of seven core locations headed by nhamp.

```
nhamp: 340045
       450000
       000000
       100276
       110100
       411141
       115222
```

The first three locations (nhamp, nhamp+1, nhamp+2) are used for storing oversize determination data. Provision is made for three classes of oversize, one to each location. Each class is determined either by a lower and upper limit - in which the former is stored in octal*, left-justified in the location, and the latter is stored in octal, right-justified - or by just a lower limit - stored in octal, left-justified, with 00 stored right-justified signifying no upper limit - or is non-existent (see example below) - the assigned location is clear. Example:

University of New Hampshire (a) 28 cm to 37 cm

(b) greater than 37 cm

(c)

---

*Octal numbering has a base of 8 rather than 10. For example decimal 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 would be written in octal as 1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 15, 16, 17, 20. In the first line of the sample profile table 34 in octal is 28 in decimal.

The next location, nhamp+3, is a sequence of three pointers, one to each oversize symbol (which is assigned to an oversize determination class). The pointers occupy bits 0-5, 6-11, 12-17 respectively. The pointer in the nth set of bits points to the oversize symbol for the nth oversize determination class, whose data is stored, for example, in nhamp+(n-1). If the nth class is nonexistent, the pointer is to an appropriate string. Oversize symbols are stored in KID form beginning with location ovsizr. If the pointer is the octal number m, the appropriate symbol is stored beginning at location ovszs+(m). Stored in ovszs is 767676 (KID fillers), and nonexistent class pointers point here. Example:

University of New Hampshire: print ovsize if 28 cm _ height 37 cm.

print Folio if 37 cm _ height

See fourth line in the above table nhamp. If the height of the book is 31 cm, it is in the first determination class; bits 0-5 of nhamp+3 contain 10, and ovsize is stored in KID form beginning at ovszs+10.

The next location, nhamp+4, records whether to make labels, pockets, book cards, copy numbers on labels, by storing either a 1 or a 0 in bits 0-2, 3-5, 6-8, 9-11, respectively. For making labels 0 refers to not selin. Example:

University of New Hampshire: make labels
make pockets
do not make book cards
make copy #'s on labels

nhamp+4 contains 110100 (octal). Note that there is still room for two more such entries, in bits 12-14 and 15-17.

University of New Hampshire:

General formula - main entries - 4
added entries - 1
subject entries - 1
shelf list - 1

Spec'l Shelf formula - main entries - 4
added entries - 1
subject entries - 1
shelf list - 1

Branch formula - main entries - 5
added entries - 2
subject entries - 2
shelf list - 2

nhamp+5: 411141

nhamp+6: 115222

FIGURE H.1

LIBRARY PROFILES

	CONN.	MAINE	MASS.	N.H.	R.I.	VT.
1. LC Call #	-	-	DS 740.5 R8H764	DS 740.5 .R8 H764	DS740.5 R8 H764	-
2. Beginning Line	Varies	ME line	ME line	ME line	line above ME	ME line
3. Oversize Detm. (a)	>28	>30	29-40	28½-37	>30	28-30
(b)			41-60	>37		31-61
(c)			>60			>61
4. Oversize Symbol (a)	f	f	+	ovsize	f	Q
(b)			folio	folio		F
(c)			F Folio			FF
5. Oversize Symbol Position (a)	same line	same line	below	above	above	above
(b)			above	above		
(c)			above			
6. Make Labels	x	x	not selin	x	x	x
7. Make Pockets	x	x	x	x	0	x
8. Make Book Cards	0	x	0	0	0	0
9. Copy #'s Labels	x	x	x	x	x	0
10. Copy #1 on Labels	x	0	0	0	0	0

FIGURE H.1 (Continued)

LIBRARY PROFILES

	CONN.	MAINE	MASS.	N.H.	R.I.	VT.
11. Copy #1 on Pockets	x	0	0	0	-	0
12. General Formula						
Main Entries	2	2	2	4	1	2
Added Entries	1	1	1	1	1	1
Subject Entries	1	1	1	1	1	1
Shelf List	1	0	1	1	1	1
13. Special Shelf Formula						
Main Entries	2	3	2	4	1	2
Added Entries	1	1	1	1	1	1
Subj. Entries	1	1	1	1	1	1
Shelf List	1	0	2	1	2	1
14. Branch Formula						
Main Entries	3	4	3	5	2	3
Added Entries	2	2	2	2	2	2
Subject Entries	2	2	2	2	2	2
Shelf List	2	0	3	2	2	2